IN THE CLAIMS:

1. (currently amended) In a network-connected integrated circuit, a method for securely buffering overhead messages, the method comprising:

receiving messages including overhead bytes in a G.709 format message with 16 overhead bytes per row;

collecting a first number of overhead bytes from a second plurality of frames;

creating a first overhead message from the collected overhead bytes by writing the first number of collected bytes from each of the second number of frames to a buffer; [[and,]]

establishing a overhead message semaphore with a byte semaphore for each overhead byte in the buffer;

saving the first overhead message by not overwriting the first overhead message stored in the buffer until [[it]] the buffer is read as follows:

setting the semaphore to the lock state; and,

in response the semaphore lock state, ceasing the writing of collected overhead bytes to the buffer for a second overhead message;

reading the first overhead message in the buffer;

collecting new overhead bytes as follows:

setting the semaphore to the unlock state following the reading of the first overhead message;

collecting a first number of overhead bytes from a second number of frames;

creating a second overhead message from the collected new overhead bytes by writing a first number of new overhead bytes to the buffer in response to the semaphore unlock state;

overwriting each overhead byte in the first overhead message with an overhead byte in the second overhead message in response to a corresponding the byte semaphore; and,

saving the second overhead message until it is read by setting the semaphore to the lock state in response to creating the second overhead message in the buffer.

2-7. canceled

8. (currently amended) The method of claim [[7]] 1 wherein collecting a first number of overhead bytes per frame from a second number of frames includes collecting trail trace identifier (TTI) bytes every frame, for 64 frames; and,

wherein creating a first overhead message includes creating an overhead message from the TTI bytes in the 64 frames.

9. (currently amended) The method of claim [[7]] 1 wherein collecting a first number of overhead bytes per frame for a second number of frames includes collecting messages selected from the group including fault type and fault location (FTFL), general communication channel (GCC), experimental (EXP), and automatic protection switching/protection communication control (APS/PCC) messages.

10. canceled

11. (currently amended) In a network including a data processor, a method for securely buffering overhead messages, the method comprising:

receiving a message including overhead bytes at a data processor in a G.709 format message with 16 overhead bytes per row;

collecting a first number of overhead bytes from a second plurality of frames;

creating a first overhead message from the collected overhead bytes by writing the first number of collected bytes from each of the second number of frames to a buffer; [[and,]]

saving the first overhead message by not overwriting the first overhead message stored in the buffer until ~~it can be~~ the buffer is read by a microprocessor as follows:

the data processor setting the semaphore to the lock state; and,

in response the semaphore lock state, the data processor ceasing the writing of collected overhead bytes to the buffer for a second overhead message:

the microprocessor reading the first overhead message in the buffer;

the data processor collecting new overhead bytes as follows:

the microprocessor setting the semaphore to the unlock state following the reading of the first overhead message;

the data processor collecting a first number of overhead bytes from a second number of frames;

the data processor creating a second overhead message from the collected new overhead bytes by writing a first number of new overhead bytes to the buffer in response to the semaphore unlock state;

the data processor overwriting each overhead byte in the first overhead message with an overhead byte in the second overhead message in response to a corresponding the byte semaphore; and,

the data processor saving the second overhead message until it is read by setting the semaphore to the lock state in response to creating the second overhead message in the buffer.

12-17. canceled

18. (currently amended) The method of claim [[17]] 11 wherein collecting a first number of overhead bytes per frame for a second number of frames includes the data processor collecting trail trace identifier (TTI) bytes every frame, for 64 frames; and,

wherein creating a first overhead message includes creating an overhead message of the TTI bytes in the 64 frames.

19. (currently amended) The method of claim [[17]] 11 wherein collecting a first number of overhead bytes per frame for a second number of frames includes collecting messages selected from the group including fault type and fault location (FTFL), general communication channel (GCC), experimental (EXP), and automatic protection switching/protection communication control (APS/PCC) messages.

20. canceled

21. (currently amended) In a network-connected integrated circuit, a system for securely buffering overhead messages, the system comprising:

a processor having an input for receiving messages including overhead bytes in a frame format and an output for supplying a first number of overhead bytes for a second number of frames;

a message buffer having an input to accept overhead bytes, the buffer collecting overhead bytes to create an overhead message from the collected overhead bytes and supplying the overhead message at an output; [[and,]]

a semaphore register having inputs to accept a lock value and an unlock value, to protect the buffered overhead message from being overwritten until the buffer is read by alerting the processor that the overhead message has not yet been read, the semaphore register including a second number of semaphore registers corresponding to each one of the first number of overhead bytes collected in the second number of frames;

wherein the processor loads the lock value into each semaphore register in response to writing the corresponding second number of overhead messages into a second number of memory locations in the buffer, and ceases to supply overhead bytes to the buffer in response to the lock value loaded in the semaphore register; and,

wherein an unlock value is loaded into each semaphore register in response to reading the corresponding second number of overhead messages from the buffer, and the processor supplies overhead

bytes to the buffer in response to an unlock value loaded in the semaphore register.

22-24. canceled

25. (currently amended) The system of claim [[24]] 21 wherein the processor receives a G.709 format message with 64 overhead bytes per frame.

26. (currently amended) The system of claim [[24]] 21 wherein the processor supplies trail trace identifier (TTI) overhead bytes every frame, for 64 frames; and,

wherein the message buffer accepts a trail trace identifier (TTI) byte every frame, creating an overhead message from storing collected TTI bytes from the 64 frames.

27. (currently amended) The system of claim [[24]] 21 wherein the processor supplies bytes selected from the group including fault type and fault location (FTFL), general communication channel (GCC), experimental (EXP), and automatic protection switching/protection communication control (APS/PCC) messages for one frame; and,

wherein the message buffer accepts a bytes from the selected group every frame, creating an overhead message.

28. canceled

29. (currently amended) In a network of connected processors, a system for securely buffering overhead messages, the system comprising:

a data processor having an input for receiving messages in a frame format including overhead bytes, an output for supplying a first number of overhead bytes per frame, for a second number of frames, and an output to supply semaphore lock values, wherein the data processor ceases to supply overhead bytes to the buffer in response to the lock value being loaded in a semaphore register;

a message buffer having an input to accept the overhead bytes, the buffer collecting overhead bytes to create an overhead message from the collected overhead bytes and supplying the overhead message at an output;

a semaphore register with an input to accept lock and unlock values, to protect the overhead message in the buffer from being overwritten, and with a second number of semaphore registers corresponding to each one of the first number of overhead bytes collected in the second number of frames; and,

a microprocessor having an input to read the overhead message in the buffer and an output to change the lock value in each semaphore register to the unlock value, in response to reading the corresponding overhead message from the buffer.

30-32. canceled

33. (currently amended) The system of claim [[32]] 29 wherein the data processor receives a G.709 format message with 16 overhead bytes per row.

34. (original) The system of claim 33 wherein the data processor supplies trail trace identifier (TTI) overhead bytes every frame, for 64 frames; and,

wherein the message buffer accepts trail trace identifier (TTI) bytes every frame and creates an overhead message from storing the collected TTI bytes from the 64 frames.

35. (original) The system of claim 33 wherein the processor supplies bytes selected from the group including fault type and fault location (FTFL), general communication channel (GCC), experimental (EXP), and automatic protection switching/protection communication control (APS/PCC) messages every frame; and,

wherein the message buffer accepts a bytes from the selected group every frame, creating an overhead message.

36. (original) The system of claim 33 wherein the microprocessor reads the overhead message from the buffer and transmits the overhead message in an upstream message.

37. canceled